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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,304	03/31/2004	Jeong-Ho Lee	6192.0366.US	5202
32605	7590	11/17/2006	EXAMINER	
MACPHERSON KWOK CHEN & HEID LLP			NGUYEN, DUNG T	
2033 GATEWAY PLACE			ART UNIT	
SUITE 400			PAPER NUMBER	
SAN JOSE, CA 95110			2871	

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,304

Applicant(s)

LEE ET AL.

Examiner

Dung Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 7-13, 18 and 24-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 14-17, 19-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicants' amendment dated 08/29/2006 has been received and entered. Claims 1-6, 14-17 and 19-23 are remain pending in the application. Claims 7-13, 18 and 24-27 stand withdrawn from consideration.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-3, 14 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,671,020 B2 (to Kim et al.)(filed: Dec. 20, 2000) in view of United States Patent 6,573,965 B1 (to Liu et al.).

As to claims 1 and 14, Kim teaches and discloses with reference to Figures 4-6 (one embodiment) a multi-domain liquid crystal display device comprising a substrate (Figure 5A, first substrate 31), a gate line (gate line 1) formed on the substrate (31) and including a gate electrode (gate electrode 11 - see Figures), a gate insulating layer (gate insulating film 35) formed on the gate line (1), a semiconductor layer (semiconductor layer 5 and ohmic contact layer 6) formed on the gate insulating layer (35) a data line (data lines 3) formed at least in part on the semiconductor layer (See Figure 4A), a drain electrode (source / drain electrodes 7 and 9) formed on the semiconductor layer (5, 6) at least in part and separated from the data line (See Figures), a first passivation film (passivation film 37) formed on the data line (3) and the drain electrode (9), a first protrusion (dielectric structure 35) is formed on a counter substrate opposing a pixel electrode (13) which is formed on the passivation film (37). The pixel electrode (13) is

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also connected to the drain electrode at least through a contact hole (See Column 7, Lines 1-15). Kim does not appear to explicitly specify that the first protrusion is formed on the pixel electrode side. Liu teaches and discloses a multi-domain wide viewing angle liquid crystal display having slits on electrodes and bumps above the slits wherein (See Figure 3) dielectric bumps (Applicant's protrusions) are formed above a pixel electrode wherein further the pixel electrode has slits (bumps = 309-312) and slits (302 and 303). The bumps are also opposite a bus line (309). It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Liu because as taught by Liu: "The advantages of forming slits on the pixel electrodes and forming bumps above the slits are: shortening the rotating distance of liquid crystal molecules 314 directed by the bumps, increasing the optical response speed and the gray level response speed of the LCD, and reducing the generation of the disclination lines. Because the generation of the disclination lines is reduced, the transmittance within the black matrix area of the invention has 15% to 20% improvement over the conventional multi-domain LCDs." (Liu at Column 4, Lines 40-55). Liu also teaches: "According to the invention, the bump-with-slit structure formed on at least one substrate uses the bumps and the fringe field effect, or the so-called electrode slit effect, to control the tilt direction of the liquid crystal molecules and to form a multi-domain LCD cell of multiple independent directions. Therefore, the internal compensation of liquid crystal molecules decreases the color dispersion of the LCD, increases the response speed and reduces the generation of disclination lines. Also, the driving voltage for the LCD is lower and the process window is larger." (Liu at Column 2, Lines 35-65).

Thus, claims 1 and 14 are rejected.

As to claim 2, as noted, the pixel electrode has cutouts (= slits).

Thus, claim 2 is rejected.

As to claim 3, as can be seen in Figure 3, there are dielectric bumps disposed in the slits.

Thus, claim 3 is rejected.

As to claims 21 and 22, the references teach color filters. See Claim Objections above.

Thus, claims 21 and 22 are rejected.

As to claim 23, the semiconductor layer has substantially the same planar shape as the data line and drain electrode (See Kim I Figure 6D).

Thus, claim 23 is rejected.

3. Claims 4-6 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,671,020 B2 (to Kim et al.)(filed: Dec. 20, 2000) in view of United States Patent 6,573,965 B1 (to Liu et al.) and further in view of United States Patent Application 2002/0163604 A1 (to Kim et al.)(Kim II).

As to claims 4-6 and 15-17, Kim I does not appear to explicitly specify what its auxiliary common electrode (15) overlaps. However, Kim II teaches and discloses that a storage electrode at least overlapping a pixel and teaches that: "... the storage capacitance is essential element to accomplish improvement of screen quality, thereby causing lowering of screen quality when the storage capacity is decreased below a predetermined level." [0039].

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim I in view of Kim II for high screen quality through controlling storage capacitance.

Thus, claims 4-6 and 15-17 are rejected.

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4. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,671,020 B2 (to Kim et al.)(filed: Dec. 20, 2000) in view of United States Patent 6,573,965 B1 (to Liu et al.) and further in view of United States Patent 6,897,918 B1 (to Nonaka et al.).

As to claims 19 and 20, Kim does not appear to explicitly specify a spacer having a height larger than the protrusion and disposed on the same layer as the protrusion and that the protrusion and spacer comprise an organic material. Nonaka teaches a color filter and protrusion and teaches spacers, protrusions and a spacer made of the same material as the protrusion for controlling liquid crystal alignment (Column 3, Lines 30-40). It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Nonaka for controlling liquid crystal alignment.

Thus, claims 19 and 20 are rejected.

Response to Arguments

5. Applicant's arguments filed 08/29/2006 have been fully considered but they are not persuasive.

Applicants' only argument that neither Kim nor Liu teach or suggest a TFT array panel comprising a protrusion and a pixel electrode formed on the first passivation layer since Kim specially teaches a protrusion (53) formed on the pixel electrode and a slit (51) formed in the pixel electrode, and Liu teaches that bumps are formed above the slits in the pixel electrode. The Examiner respectfully disagrees with Applicant's viewpoint. In particular, re Kim reference, although the Kim's protrusion (dielectric structure 53) has not formed directly on the passivation

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layer (emphasis added), such protrusion does form on the passivation layer as claimed. In other words, such Kim's dielectric structure does meet the claimed protrusion.

Claims 4-6, 15-17 and 19-20 depend from independent based claims 1 and 14.

Therefore, the modification to Kim would have been at least obvious to one skilled in the art as stated above.

Accordingly, the rejection of the above claims stand.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

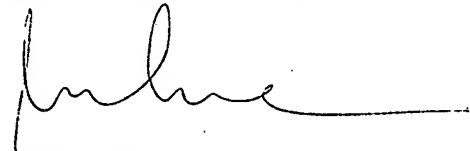
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Nguyen whose telephone number is 571-272-2297. The examiner can normally be reached on Tuesday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DN
11/13/2006



Dung Nguyen
Primary Examiner
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